Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion	)	GN Docket No. 17-199

COMMENTS OF O3B LIMITED

SES S.A. ("SES") and its subsidiary O3b Limited ("O3b") (together, "the Companies") welcome the opportunity to submit these comments in response to the Commission's Thirteenth Broadband Progress Notice of Inquiry ("*NOI*").[1]

I. BACKGROUND

SES, one of the world's largest commercial communications satellite operators, is uniquely positioned to comment on issues raised by the *NOI*, with facilities that include both geostationary ("GSO") and non-geostationary ("NGSO") satellite fleets. SES entities operate more than 50 GSO satellites able to reach 99% of the world's population, many of them pursuant to Commission authority. These spacecraft serve broadcasters, direct-to-home ("DTH") service providers, and corporate and government customers worldwide with offerings that include video and audio content distribution, DTH, private networks, broadband, satellite news gathering, aeronautical and maritime services, and mobile backhaul.

[1] *See generally Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion,* Thirteenth Section 706 Report Notice of Inquiry, GN Docket No. 17-199, FCC-17-109 (rel. Aug. 8, 2017) ("*NOI*").

O3b, a wholly-owned subsidiary of SES, is a global broadband satellite system in Medium Earth Orbit ("MEO") that operates a constellation of twelve NGSO satellites in the Ka-band and offers high-speed, low-latency broadband connectivity where coverage from terrestrial networks is limited or non-existent. Since O3b satellites are at the MEO altitude of 8062 km, users on O3b's system typically experience round trip latency of less than 150 milliseconds, approximately one quarter the latency of geostationary orbit satellites. These features enable the provision of high quality, broadband internet access comparable to fiber-based broadband services.

O3b satellite capacity enables fast and affordable broadband connectivity in locations unserved or underserved by other broadband services and offers its services to telecommunications operators, Internet service providers, large enterprises and governments. O3b does not directly serve consumers or end users, instead, it offers middle mile capacity to large service providers that use O3b's satellite capacity to deliver service to end users, utilizing the 27.6-28.4 and 28.6-29.1 GHz band for its uplink and 17.8-18.4 and 18.6-19.1 GHz band for its downlink.

II. O3B'S ROLE IN THE TELECOMMUNICATIONS ECOSYSTEM

The Companies are actively engaged in accelerating the development of communities and governments around the world by supplying connectivity for disaster response and humanitarian efforts, e-health, e-education, e-government, as well as defense and security missions. The O3b MEO constellation provides global coverage on land, at sea, or in the air in nearly 180 countries. The O3b network is scalable, so that more satellites can be brought into operation in the same orbital plane as needed to meet market demand. In fact, in response to such a high demand, O3b

has already requested authorization to launch more satellites[2] and is expected to launch eight more satellites in 2018 and 2019.

The O3b MEO-enabled connectivity continues to ensure that advanced telecommunications are being deployed in a timely fashion in the US and abroad. In 2016, O3b services were used to deliver over 2 Gbps of high-throughput capability across seven different countries to both US and international government customers, including the Department of Defense ("DOD") and the National Oceanic and Atmospheric Agency ("NOAA"). Most recently, in 2017, the DOD expanded its O3b MEO coverage by signing a five-year task order with SES Government Solutions.[3] O3b will provide an additional satellite beam's worth of capacity to enable access to real-time information for key U.S. government end-users in the field. O3b connectivity will allow for faster broadband deployment as users will have the capability to transfer large files from remote locations in just minutes instead of hours.[4] Furthermore, cloud-based applications and information can be used anywhere in the service area and end-users will have the ability to view instantaneous high-definition videos providing situational awareness to commanders.

O3b also serves other U.S. customers including Royal Caribbean Cruise Lines[5] and Rignet, a global provider of offshore communications to the oil and gas industry.[6] Whether it is

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[2] *O3b Limited*, Call Sign S2935, File Nos. SAT-MOD-20160624-00060; SAT-AMD-20161115-00116; & SAT-AMD-20170301-00026.

[3] *See* Press Release, SES Networks, *SES Government Solutions Lands Additional MEO Beam Task Order with U.S. Department of Defense*, (August 1, 2017), https://www.ses.com/press-release/ses-government-solutions-lands-additional-meo-beam-task-order-us-department-defense.

[4] O3b services will include an additional 432 MHz satellite beam operating at less than 200 milliseconds round trip, a full duplex link, gateway access, transportable 2.4m AvL terminals, terrestrial backhaul, installation services and around the clock, year-long operations and maintenance activities.

[5] *See* Press Release, O3b, *O3b Connects Royal Caribbean "Smart Ship" Anthem of the Seas in the Mediterranean,* (June 17, 2015), https://www.o3bnetworks.com/o3b-connects-royal-caribbean-smart-ship-anthem-of-the-seas-in-the-mediterranean/.

[6] *See* Offshore Energy Today, *RigNet picks O3b Networks Comms Solutions for Gulf of Mexico*, (November, 24, 2015), http://www.offshoreenergytoday.com/rignet-picks-o3b-networks-comms-solutions-for-gulf-of-mexico/.

providing the ability to transfer crucial government files to defense personnel, critical updates to weather forecast models and safety warnings in near-time, high-speed internet connectivity to cruise ship passengers and crew, or the necessary communications for workers to stay connected while stationed on offshore facilities, the availability of O3b MEO-enabled connectivity ensures that advanced telecommunications capability is being deployed to Americans in a reasonable and timely fashion.

III. SATELLITE COMMUNICATIONS SERVE A CRUCIAL ROLE IN BROADBAND DEPLOYMENT AND MOBILE BACKHAUL

Satellite services can serve a key, complementary role to mobile operations in the telecommunications ecosystem. O3b capacity allows mobile operators to reach subscribers more economically, significantly improving voice quality, performance, and data services beyond the reach of terrestrial infrastructure. By allowing mobile network operators and internet service providers to extend high performance 3G and 4G rural areas, in a cost-effective way, O3b offers a unique solution to today's challenges for emerging market network operators. While high latency in IP networks can reduce performance, O3b's low latency is comparable to that of fiber, allowing for significantly higher end-user throughput. O3b satellites offer mobile operators a smooth track from circuit switched voice to packed-based IP networks.

Satellite communications also provide fast, ubiquitous coverage to remote and underserved areas that are often out of reach for cellular terrestrial systems. Access to O3b capacity eliminates the need to construct extensive and expensive terrestrial backhaul networks, offering low cost per megabit. This also allows mobile operators to connect more customers and expand geographical coverage, ultimately creating a cost-effective innovative solution to ensure

that advanced telecommunications capabilities like 4G/LTE are being deployed to unserved and underserved areas.

Satellite communications also play a crucial role in disaster relief efforts, notably in areas where mobile networks have been damaged or destroyed. O3b capacity allows humanitarian organizations, first responders, and government services to communicate reliably over a high-performance network to coordinate effective, time-sensitive relief efforts. When terrestrial infrastructure is down or overburdened due to natural disasters or other emergencies, O3b can provide backhaul services to facilitate communications. For example, ships equipped with O3b Maritime terminals that are near disaster areas to become hubs for emergency support services. The high-bandwidth, low-rapid transmission of medical data and logistics coordination allow for global support to communicate in affected areas.

For example, O3b's *FastConnect* solution[7], utilizing temporary fixed satellite antennas, can be rapidly deployed for many services, including humanitarian aid. This solution played a critical role earlier this year for Peru, which experienced some of the deadliest El Nino weather in decades.[8] Severe rainfall led to widespread flooding, mudslides, and damage to telecommunications infrastructure. The Peruvian government declared over 900 provinces to be in a state of emergency, and hundreds of thousands of Peruvians were displaced and without basic internet connectivity. The Project Loon team, with its balloon based internet connectivity that can extend to where it is needed, worked with O3b Networks, with its ability to fully support 4G/LTE with fiber-like high throughput and low latency, in addition to several local technology

[7] O3b's *FastConnect* is designed to deliver IP transit bandwidth with speeds of up to 1.6 Gbps at fixed terrestrial locations equipped with O3b's transportable AVL 2.4-meter antennas.
[8] O3b Limited, *O3b Networks Works with Project Loon Team to Reconnect People Recovering from Floods in Peru,*(May 17, 2017), https://www.o3bnetworks.com/o3b-networks-teams-project-loon-get-peru-back-online/.

partners to successfully restore connectivity to areas of Peru affected by the flood. With Project Loon's targeted cellular coverage and O3b's *FastConnect* solution, a rapidly deployable fiber-like performing satellite terminal that provides high speed internet connection, vital communications infrastructure was provided to those in the affected region. This collaboration, utilizing both terrestrial and satellite services, yielded the innovative solution needed to restore communication capabilities in disaster areas.

Future O3b MEO deployment will continue to offer innovative solutions to ensure broadband deployment reaches underserved and unserved areas. In 2021, SES will be adding to the O3b fleet with a new constellation of seven next-generation MEO satellites, O3b mPOWER.[9] The new system will be capable of delivering multiple terabits of throughput globally to connect exponentially more people, businesses, and communities all over the world. The integration of O3b mPOWER with the SES fleet will enable global coverage and the ability to route application-optimized traffic over GEO, MEO, or terrestrial networks.

IV. CONCLUSION

The Companies urge the Commission to consider innovative solutions to ensure the deployment of advanced telecommunications capability to all Americans, including satellite services, which provides connectivity to underserved and unserved areas. The O3b's MEO constellation continues to play many key roles in advancing broadband deployment in a timely fashion, including providing mobile backhaul in rural areas and connectivity during emergency

[9] See Press Release, SES Networks, *SES Opens New Era in Global Connectivity with O3b mPower*, (September 11, 2017), https://www.ses.com/press-release/ses-opens-new-era-global-connectivity-o3b-mpower.

and disaster relief response efforts. The Companies offer these comments in support of this *NOI* and is readily available to assist in furthering the Commission's efforts.

Respectfully submitted,

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